

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
18 March 2004 (18.03.2004)

PCT

(10) International Publication Number
WO 2004/023440 A3

(51) International Patent Classification⁷: **G06F 3/033**

(21) International Application Number:
PCT/IB2003/003850

(22) International Filing Date:
1 September 2003 (01.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02078677.8 6 September 2002 (06.09.2002) EP

(71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **JOHNSON, Mark, T.** [GB/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **HENZEN, Alexander, V.** [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **CORNELISSEN, Hugo, J.** [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(74) Agent: **DEGUELLE, Wilhelmus, H., G.**; Philips Intellectual Property & Standards, Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

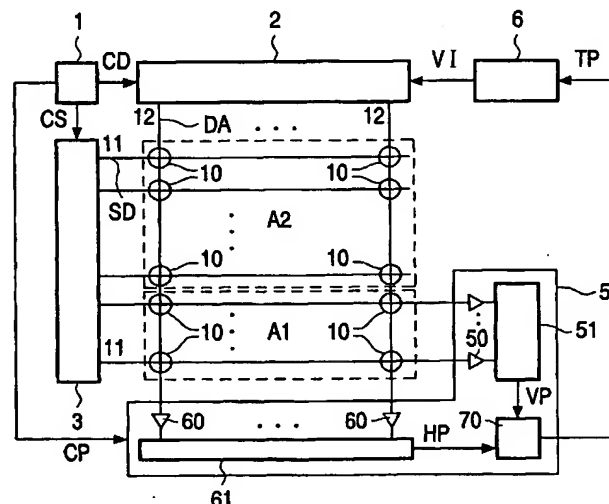
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,

[Continued on next page]

(54) Title: TOUCH SENSING DISPLAY



(57) Abstract: A touch sensitive matrix display senses touch input during a sense period (TS) in a separate sense area (A1) which is selected to be non-overlapping with a display area (A2) in which information is displayed dependent on the touch position which is sensed in the sense area (A1). During the sense period (TS), the sense area (A1) is not addressed. The non-address period of time (TR) occurring between two successive sense area addressing periods (TA2) of the sense area (A1) lasts at least as long as, but preferably substantially longer than, the display area address period (TA1,i) required to address the complete display area (A2). The data displayed in the sense area (A1) is refreshed by addressing the sense area (A1) during the sense area address periods (TA2) in-between the sense periods (TS). The data displayed in the sense area (A1) will not be disturbed by the sensing and will be present between two successive sense area addressing periods (TA2, TA2') because the pixels 10 of the matrix display have an optical state which, when not addressed, is maintained longer than the non-address period (TR).



CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE,

DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

— with international search report

(88) Date of publication of the international search report:

4 November 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PO 03/038505

10/526862

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F3/033

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 159 323 A (MASE AKIRA ET AL) 27 October 1992 (1992-10-27) the whole document	1,2,8,9
A	EP 0 509 589 A (PHILIPS ELECTRONICS UK LTD ; PHILIPS NV (NL)) 21 October 1992 (1992-10-21) column 5, line 23 - column 6, line 55 column 8, line 54 - column 11, line 6; figures 1-3	1,2,5,8, 9
A	EP 0 618 527 A (AT & T GLOBAL INF SOLUTION) 5 October 1994 (1994-10-05) column 3, line 24 - column 4, line 7; figure 7	1,2,4,8, 9

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

2 July 2004

Date of mailing of the international search report

13/07/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Leineweber, H

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intellectual Application No

PCT/JP03/03850

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5159323	A	27-10-1992	JP 1746119 C	25-03-1993
			JP 4029086 B	18-05-1992
			JP 63204313 A	24-08-1988
			JP 2001891 A	08-01-1990
			US 4875378 A	24-10-1989
EP 0509589	A	21-10-1992	DE 69217105 D1	13-03-1997
			DE 69217105 T2	17-07-1997
			EP 0509589 A2	21-10-1992
			JP 3496947 B2	16-02-2004
			JP 5119910 A	18-05-1993
			US 5838308 A	17-11-1998
EP 0618527	A	05-10-1994	DE 69420883 D1	04-11-1999
			DE 69420883 T2	13-04-2000
			EP 0618527 A1	05-10-1994
			JP 7072823 A	17-03-1995
			US 5610629 A	11-03-1997